

REMARKS/ARGUMENTS

Claims 1, 2, 5, 10 and 49 are active. Claims 6-9 and 11-48 have been withdrawn from consideration. Claims 1, 5 and 10 have been revised to add the word “isolated”. Claim 10 refers to stringent hybridization conditions which are described in the specification, for instance, on pages 16-18. New Claim 49 finds support in original Claim 5 and on page 4, lines 20-26 of the specification. Accordingly, the Applicants do not believe that any new matter has been added.

Election/Restriction

The Applicants note that the Restriction Requirement has now been made Final.

Claim Objections

Claim 10 was objected to as being dependent on a non-elected base claim. This objection is moot in view of the presentation of Claim 10 in independent form.

Rejection—35 U.S.C. §101

Claims 1-5 and 10 were rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. The Applicants submit that this rejection is now moot in view of the amendment of these claims to refer to “isolated sorbitol dehydrogenase”.

Rejection—35 U.S.C. §112, first paragraph

Claims 1, 3-5 and 10 were rejected under 35 U.S.C. 112, first paragraph as lacking adequate description. The Applicants submit that the specification adequately describes the enzyme of Claim 1 by its molecular weight and functional properties. The enzyme of Claim 5 is defined by reference to SEQ ID NO: 1 or to a variant which has one or several alterations

to SEQ ID NO: 1, and thus has a substantial amount of structural definition. Similarly, the enzyme of Claim 10 is defined both by its source, *Gluconobacter*, as well as its structure, that is it is encoded by a nucleic acid which hybridizes to SEQ ID NO: 2 under stringent conditions. Accordingly, the Applicants respectfully submit that the claimed subject matter is adequately described and respectfully request that this rejection now be withdrawn.

Rejection—35 U.S.C. §112, first paragraph

Claims 1, 3-5 and 10 were rejected under 35 U.S.C. 112, first paragraph as lacking adequate enablement. The Applicants thank the Examiner for indicating that the specification is enabling for a sorbitol dehydrogenase of SEQ ID NO: 1. The Applicants submit that the specification would adequately enable one with skill in the art to make and use the claimed enzymes for the following reasons. The enzyme of Claim 1 is described by its molecular weight and functional properties and thus one with skill in the art would be enabled to select an enzyme based on its weight and identify it by these functional properties. Moreover, the enzyme of Claim 5 is defined by reference to SEQ ID NO: 1 or to a variant which has one or several alterations to SEQ ID NO: 1, and thus has a substantial amount of additional structural definition which further enables its production and use. Similarly, the enzyme of Claim 10 is defined both by its source, *Gluconobacter*, as well as its structure, that is it is encoded by a nucleic acid which hybridizes to SEQ ID NO: 2 under stringent conditions. Accordingly, the Applicants respectfully submit that the claimed subject matter is adequately enabled and respectfully request that this rejection now be withdrawn.

Rejection—35 U.S.C. §112, second paragraph

Claims 1, 3 and 10 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The Applicants submit that this rejection is moot in view of the amendment of the

claims. Claim 3 has been cancelled and Claim 10 now refers to stringent hybridization conditions.

Rejection—35 U.S.C. §102(b)

Claims 3-5 and 10 were rejected under 35 U.S.C. 102(b) as being anticipated by Adachi et al., Biosci. Biotech. Biochem. 63:2137 (December, 1999). The effective U.S. filing date for the present application is March 16, 2000. Accordingly, Adachi et al. is not properly applied under 35 U.S.C. 102(b). To avoid the imposition of a rejection under 35 U.S.C. 102(a), the Applicants will submit an English translation of their foreign priority document, which antedates Adachi et al., and point out support for the present invention in this document.

Rejection—35 U.S.C. §102

Claims 3-5 and 10 were rejected under 35 U.S.C. 102(b) as being anticipated by Hoshino et al., U.S. Patent No. 5,747,301. Hoshino does not anticipate the present invention because the sorbitol dehydrogenase of Hoshino is NAD/NADP independent, see page 2, line 23 of EP0897984. In contrast, the sorbitol dehydrogenase of Claims 1 and 2 is NAD(P)<sup>+</sup> dependent. Therefore, the sorbitol dehydrogenase of Claims 1 and 2 differs from that of Hoshino, and thus is not anticipated.

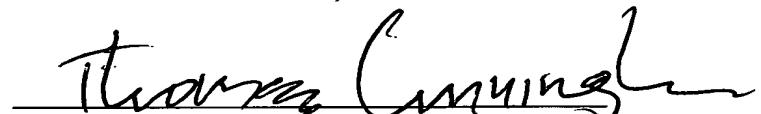
With respect to Claim 5, only one to several amino acids may be modified. Thus, the number of modified amino acids would be very small compared to the total number of amino acids in the protein. Therefore, the modified protein in Claim 5 would also differ from that of Hoshino.

**CONCLUSION**

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

  
Thomas M. Cunningham  
Thomas M. Cunningham, Ph.D  
Attorney of Record  
Registration No. 45,394

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/03)